

Mission Factsheet

New Horizons, Canberra Deep Space Communication Complex and Pluto

New Horizons

- New Horizons is the first ever mission to Pluto and the Kuiper Belt.
- New Horizons blasted off from Cape Canaveral in Florida on the 19th January 2006 and is scheduled to make the closest approach on Tuesday 14th July at 9:49:57 pm AEST.
- New Horizons will have travelled 5.3 billion kilometres to reach Pluto.
- New Horizons is the fastest spacecraft ever launched from Earth.
- New Horizons has flown the furthest into space just to start its main mission.
- The closest New Horizons will pass above Pluto's surface is approximately 12,500 kilometres.
- New Horizons will only be in range of Pluto for 5 hrs as it flies past and then heads off into deep space.
- The New Horizons Spacecraft's primary structure is 0.7 m tall, 2.1 m long and 2.7 m at its widest. It has a 2.1-m diameter antenna dish that is attached to the top deck; the spacecraft measures 2.2 m tall from the payload attachment fitting on the bottom deck to the top of the dish antenna stack.
- The probe is powered by plutonium-238, an element named after Pluto.
- New Horizons required a gravity slingshot from Jupiter in 2007 to gain enough speed to get to Pluto.
- There are six scientific instruments mounted to New Horizons that will collect a range of information including imaging spectrometers, particle detection instruments and a passive radiometer. Their names are Alice, LORRI, Ralph, PEPSSI, SWAP and Rex.
- New Horizons also carries the first student-built experiment to fly on a deep space mission - a dust particle counter - produced by a group of students from the University of Colorado and named for the girl who named Pluto, Venetia Burney.



Artistic impression of New Horizons flying over Pluto and its moon Charon

Canberra Deep Space Communication Complex

- CSIRO's Canberra Deep Space Communication Complex (CDSCC) will be the first place on Earth to receive the data from New Horizons as it probes Pluto and its moons.
 - The CDSCC will hand over tracking to its sister Deep Space Network sites as the Earth orientation changes.
- CDSCC currently has four active antennas. The big dish, Deep Space Station 43 (DSS43) will be used as the prime antenna to receive these signals and collect from New Horizons some of the first close-up images of the dwarf planet.
- During the half-hour when the spacecraft is closest to Pluto and Charon, it will take close-up pictures in both visible and near-infrared wavelengths. The best pictures of Pluto will depict surface features as small as 25 m across.
- The Canberra Deep Space Communication Complex will receive the images and science data in binary code as a massive cache of 1s and 0s.
- Pluto is so far away from Earth that it takes 4.5 hrs for the data from New Horizons to reach the CDSCC.
- By the time the radio signals from New Horizons reaches Earth they are 20 billion times weaker than the power of a watch battery – they are captured and processed by CDSCC's giant antenna dishes before being sent to waiting mission scientists.
- CDSCC, along with NASA's other 2 Deep Space Networks, will complete a critical science experiment at Pluto called REX (Radio science EXperiment).
- The experiment will enable scientists to determine more about the density and temperature range of Pluto's atmosphere and whether its largest moon, Charon has an atmosphere.

Pluto

- Pluto's location was originally predicted by Percival Lowell in 1915 before being discovered on February 18, 1930 by Clyde Tombaugh at the Lowell Observatory in Arizona, USA.
- Pluto was named after the Roman God of the underworld by an 11 year old girl, Venetia Burney, who lends herself to the VBSDC instrument onboard New Horizons.
- In 2006 the International Astronomy Union reclassified Pluto as a dwarf planet.
- Light takes 4.6 hours to travel from Earth to Pluto, so when the CDSCC first receives data from New Horizons, that information has been crossing interplanetary space for just over 4 and half hours.
- There are five moons in orbit around Pluto. Charon, the largest was discovered back in 1978. Hydra, Nix, Kerberos and Styx were all discovered between 2005 and 2012.
- At its closest point to the Sun or its 'perihelion' Pluto is 4.4 billion km away. When it reaches its 'aphelion' or the point where Pluto is furthest from the Sun, the ice dwarf is 7.3 billion km away from the warmth of our star. Because of this orbit, Pluto is periodically closer to the Sun than Neptune.
- The length of a Pluto day is equal to 6 days, 9 hours and 17 minutes, compared to Earth's 24 hours. It takes Pluto a whopping 247.9 Earth-years to complete one orbit of the Sun
- Temperatures on Pluto range from -210C to -235C.
- The planet is made up of one third frozen water with the remaining two thirds consisting of rock. The New Horizons mission will seek to learn more about the composition of the dwarf planet.
- Pluto spins in the opposite direction to Earth.
- Attempting to see Pluto from Earth is like trying to see a walnut from nearly 50 km away.
- Pluto is approximately 4.92 billion kilometers from Earth in July 2015.
- The sky is so dark on Pluto you could see stars during the day.

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